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XEROX 9700 STAFF STUDY

AUGUST 1979

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Attachment C
Actual Cost Per Copy

Attachment F
Total Copy Cost

Attachment G Xerox 9700 Lease/Purchase Cost

Attachment H
Washington, D.C. Area 9700 Users

Introduction

- 1. The Xerox 9700 is a complete, electronic self-contained device that uses a laser exposure system. Its information input is via computer or computer magnetic tape and it prints directly on bond paper, using the conventional xerographic process. The 9700 has a multiple font capability and is very flexible as to its capability to change fonts within a line and/or a page. (See brochure and samples in Attachment A).
- 2. The 9700 printing concept offers tremendous advantages over present day printing techniques. It eliminates the transfer of information to a phototypesetter which employs the use of expensive photographic paper, that in turn, has to be processed through a paper processor. It also eliminates the offset camera work of creating and stripping a negative from the typeset page, producing a printing plate and the subsequent mounting and running of a plate on the printing press. Through the use of magnetic tape the 9700 offers "instant" results from photocomposition devices such as P&PD's ETECS system.
- 3. In addition to the 9700's printing capabilities, it contains a forms package that allows the user to design, create and store forms. The user can design and create forms on demand. Revisions are easily accomplished by changing the original design parameters. Forms are stored magnetically and can easily be recalled for printing revisions.
- 4. The 9700 allows the user to do "on demand" printing whereas only the number of copies that are requested are printed and if additional copies are needed at a later date they are recalled and printed instantly. This can eliminate the cost for storing and maintaining large volumes of forms and printed information.
- 5. With two input trays for paper and a properly programmed tape the 9700 has the capability to print a publication with its cover simultaneously and collate them into sets.
- 6. There are, of course, disadvantages to the Xerox 9700 printing system. The 9700 does not have the capability to print an original larger than 8½ x 11 inches, it cannot print in color, nor can it print half tone photographs. It is an expensive device with a list price of over \$285,000.00. It can be leased at approximately \$7,000.00 per month and .0035 cents per copy. The quality of output is considered utility printing which is about on par with present day multilith presses.

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7. The 9700 was first developed as a replacement device for the Xerox 1200 computer printer, but, because of its higher quality output and multifont capability, it is finding greater acceptance in the printing community as a demand printer than in the data processing community. Due to the flexibility of the 9700 and the potential uses within P&PD this study was undertaken.

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Purpose

1. The purpose of this study is to determine the practicality of acquiring a Xerox 9700 Laser Printer for use in the Printing and Photography Division.

Assumptions

- 1. In order for a Xerox 9700 to increase the overall effectiveness of P&PD's ability to accomplish its mission the following assumptions are made.
 - a. The 9700 can be used in P&PD for the following three functions: (1) forms design and printing, (2) the providing of proof copies for publications that are in the printing process and (3) to produce printed publications that are currently being produced by conventional methods.
 - b. The 9700 will be less labor intensive than the present method of operation.
 - c. The 9700 can be interfaced with the P&PD ETECS equipment.
 - d. P&PD will provide 9700 service to computer output customers.
 - e. Appropriate floor space for the 9700 is available within P&PD.
 - f. Personnel resources are available within P&PD to operate the 9700.
 - g. The 9700 will be more cost effective than the present method of operation.

Facts Bearing on The Problem

- 1. The Office of Data Processing (ODP) presently has one Xerox 9700 and may acquire another one within the next year. These devices are for the use of all Agency components including P&PD.
- 2. There are other potential users of the 9700's in the Agency, including Cable Secretariat and DDO Registeries.
- 3. The demand for faster product turnaround, with less labor cost, is a consistent P&PD requirement.

Discussion

- 1. Forms Design and Printing
 - The Xerox 9700 has an extensive forms design and printing capability. The user can design a form on either the 9700 terminal, a Xerox 850 word processor, or an ODP VM terminal using a basic English language program. Once the form is designed, it can be stored on a magnetic disk or tape and called back for revisions or printing as By using this program one can decrease forms necessary. storage space and avoid printing large quantities of forms which may be wasted through obsolescence. Forms could be printed on a demand basis by requisition through P&PD instead of storing large quantities in the warehouse. Another advantage of the 9700's forms package is its ability to store forms, recall them, and merge the form with This is a tremendous advantage when textual information. printing a computer report that requires a forms overlay. It would also simplify overprinting information on standard Agency forms.
 - The average time it takes to create a form on the 9700 is between .5 and 1.5 hours depending on its complexity. A revision can take as little as five minutes depending on The 9700 can be used for the design and complexity. printing of between 75 and 80 percent of the Agency forms. The remaining 20 - 25 percent, because of size (over 8½ x 11 inches) or format (multi-part), would have to be handled by conventional methods. There is a total monthly average of 80.8 forms produced by P&PD. Of this total, 10.8 are new forms, 41 require revisions and 29 are existing forms that are reprinted. These 80.8 forms require a monthly average of 700,673 printed impressions. If these forms were drafted and produced via the 9700 a yearly average of The overall cost 778.56 P&PD work hours would be saved. (labor, supplies and equipment rental) would be increased by \$20,599.79 per year (see Attachment B, paragraph 1.) These costs reflect printing all copies of the forms that lend themselves to 9700 printing. In some instances the costs would be less by producing a camera master on the 9700 and printing the forms on a conventional press. Although the overall printing cost would be greater by printing forms on the 9700, the advantages would be savings in work hours, reduced storage of forms, and quicker response time.

- There is a problem of controlling the design and production of forms in the Agency due to the acquisition of the Xerox 9700 in ODP. Anyone who has access to the ODP 9700 could, in theory, design and produce their own ODP is currently giving 9700 users instructions in forms design. The purpose of the instructions is to allow the users to design their form overlays for use with computer reports. However, there is nothing to prevent the users from designing a conventional form for use in their own office. With the use of the 9700, forms management as we know it today may become non-existent. has indicated that there is a need for a centralized facility for forms design and drafting. They believe that the facility should be in P&PD where present forms work is being done. The forms facility, under the proposal, would be responsible for designing both the conventional Agency forms and form overlays for use with the 9700. A centralized forms facility would require a minimum of one additional position, even with the automation of the 9700.
- d. Forms design, storage, and printing is a primary consideration in identifying the potential P&PD applications for a Xerox 9700.

2. Proof Copies of Publications

P&PD produces a monthly average of 14,300 proofs per month. These proofs are made by creating an original through the Autologic Phototypesetter, processing the output and making subsequent copies on the Xerox 3100 The two major problems with this process are cost and throughput time. The high cost involve supplies for the phototypesetter and work hours associated with this process. Throughput time is considerable because of the steps involved. The typesetter prints at speeds up to .5 pages per second. The typeset page is on photographic paper which has to be processed. Once processed, the typeset page is taken to the Xerox 3100 where copies are made at the rate of approximately 10 per minute. Xerox 9700 prints at a rate of two pages per second and does not require additional handling such as photographic processing or the use of a second machine to make the required number of copies.

b. Producing page proofs via the 9700 would save an average of 283.08 work hours each year for a total overall cost savings of \$17,934.60 (see Attachment B, paragraph 2.) These savings could be accomplished by producing customer galley proofs via the 9700. Additional savings would occur by providing page proofs via the 9700. In order to produce page proofs, however, complete page make-up would have to be implemented through the ETECS system. Phototypesetters would still be necessary to produce camera ready copy where the ultimate quality of output is required.

3. Publication Printing

- a. A recent survey, conducted by the Systems Staff, of P&PD printed publications indicated that there are a minimum of 17 Agency publications (Attachment C) that lend themselves to Xerox 9700 type of printing. These publications range from the National Intelligence Daily Review Cable to Headquarters and Field Regulations and Handbooks. The criteria of selection was that all publications be 8½ x 11 inches or less in size and contain only black and white textual material. Some of the publications identified required extremely short turnaround time (less than 4 hours) which tends to make these publications even more attractive for 9700 printing.
- Of the publications identified, the Headquarters and Field Regulations are likely candidates for initial conversion to 9700 printing techniques. regulations can be stored in ETECS or on magnetic tape, revised and printed almost immediately on the 9700. This type of "demand" printing would decrease turnaround time of the initial publishing of regulations and would eliminate supplemental storage and distribution of regulations from the Records Center. Printing the regulations on the 9700 would save P&PD 509.52 work hours annually with a total annual dollar savings (labor, supplies and equipment rental) of \$38,086.32. The 9700 would also be able to overprint the word "field" down the right hand margin of the page which presently has to be stripped in on the camera ready copy. Additional high potential publication candidates for the 9700 include the National Intelligence Estimate (NIE) drafts that average 40 pages for 210 copies each and NFAC Staff Notes that average 10 - 20 pages for 300 - 400 copies.

- c. If all the publications identified were printed via the 9700 a total annual savings of 863.52 work hours and \$21,054.66 would be realized (see Attachment B paragraph 3). The cost savings is lower than that indicated for the regulations because in some instances it is more expensive to print large volumes of pages on the 9700. Throughput time, however, of the identified items could be cut by as much as 40 percent.
- d. There are probably additional publications that were not identified in the survey that can be printed either entirely on the 9700 or a camera ready master produced via the 9700. The labor savings on those publications that could go directly from ETECS to a 9700 printed copy are tremendous. The benefits and savings from printing by this method appear to be very attractive but are difficult to identify without in-house experience on the system.

4. Xerox 9700 Labor Analysis

- a. The Xerox 9700 prints at a speed of two pages per second. It requires no hard copy masters in using computer input, so therefore there is no need to handle or create hard copy masters or plates. Attachment D shows the work hour relationship of the 9700 to the 9200, Multilith and offset presses. The 9700 shows substantial labor savings over the present P&PD printing and duplicating equipment in every category.
- b. If the 9700 was used in P&PD for forms generation and the printing of proofs, publications and forms a minimum of one work year would be saved annually. Not only would P&PD realize the work hour savings, but in a number of instances, actual job throughput times would be reduced substantially.
 - c. The 9700 does not require a journeyman compositor or pressman to operate it. Therefore, additional labor cost savings can be realized from using a lower salaried employee than is presently being used with the conventional processes. If the 9700 operator was paid at a WI-12 rate, the annual savings would be \$8,756.60 over a pressman rate.
 - d. Overall, the biggest benefit of the 9700 is its labor savings capability. In almost every instance it is more expensive than the conventional process but the labor savings and quicker throughput overrides the cost factors.

- 5. Xerox 9700 to ETECS Computer Interface
 - a. At the present time there is no 9700 on line interface capability with photocomposition devices such as the P&PD ETECS equipment. Both Xerox and Atex are presently holding discussions on the possibility of interfacing the 9700 to the Atex equipment. The outcome of those discussions is unknown at this time. On the surface, it looks as if such an interface would benefit both companies. Xerox does offer an on line interface to use IBM 360/370 computers. In the future P&PD could use P&PD/ODP data links to route ETECS information through VM, creating a VM Script file that could be output to a 9700 on line to ODP's computer system in ODP or P&PD.
 - The only way to have ETECS information printed on the 9700 at the present time is via magnetic tape. tape would have to be created on the ETECS system, then mounted on the 9700 and subsequently printed. However, a standard output ETECS tape is not compatible with the Xerox 9700. The ETECS information would have to be routed through a special software routine prior to the creation of the magnetic tape. This action will make the ETECS created tape compatible to the 9700. required special software routine was developed by the House of Representative Data Processing Department where it is currently being used. This software routine is available, free of charge, to P&PD. Creating a magnetic tape is a drawback to 9700 utilization in P&PD because the existing phototypesetting equipment is on line to ETECS and is more convenient to use. In order to obtain maximum benefits from a 9700 type device, it must be connected on line to the ETECS equipment. The ultimate output equipment configuration would be an on line/off line Xerox 9700 and a phototypesetter connected directly to This configuration would give the ETECS user the option of directing his output to either the 9700 or the phototypesetter, depending on whether he wanted proof copies, quick turnaround utility printing or a graphics arts type quality product. In the off line mode the 9700 could be used to print forms stored on magnetic tape or to print conventional computer type information from the Computer Center.

c. Xerox has contracted with a local computer software firm to develop composition software for the 9700. This would allow the user to load straight textual information into the 9700 with no command codes embedded in the data. The software in the 9700 would do the right and left hand justification and automatic page make up. This software should be available within the next 6 months. If the software performs as advertised it should simplify data inputting from both ETECS type systems and from conventional computers.

6. Additional 9700 Applications

a. There is a potential for P&PD to produce conventional computer printout type of work on a Xerox 9700. P&PD could provide 9700 service to all Agency users. This type of service would possibly be in conflict with ODP's 9700. However, because of cost factors, (see Attachment D), it may be advantageous for ODP to route multiple copy jobs to P&PD for processing. The reason is that P&PD would have the option of taking a multiple copy job, producing one copy on the 9700, then printing subsequent copies on the Xerox 9200 or 9400 or on a press. This action would also allow the 9700 to handle a larger number of jobs because it would not be occupied in printing multiple copies of single jobs.

7. Equipment Location

- a. If P&PD were to acquire a Xerox 9700, it should be located where it is convenient to both the input device (ETECS) and supplemental output devices (Xerox 9200/9400). Making a recommendation for a location within P&PD is difficult because of the recent reorganization of the printing plants. On the one hand it would be advantageous to locate the machine in the P&P Building where the majority of work force and equipment is located. On the other hand locating the machine in GJ-56 Headquarters has the advantage of being close to ETECS, the Xerox 9200/9400 copiers and convenient to ODP and to other possible Agency users. Space and personnel are, however, limited in the GJ-56 location.
- b. Overall, the best location for a P&PD 9700 appears to be in GJ-56. The primary reason for this selection is ready access to the Xerox 9200/9400s. Much of the work that would be printed on the 9700 lends itself to 9200/9400 duplication rather than through conventional press output. The location would also provide for an easier on line hookup to ODP, if necessary. The machine could be used as a proofing device for the GJ-56 ETECS center;

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output from the P&P building's ETECS could be routed via data link to GJ-56, to be printed on the 9700. Forms design could be done on a terminal in either location with a magnetic tape created for printing on the 9700. Some of P&PD's Computer Output Microfilm (COM) customers require hard copy printout of their reports in addition to COM. A 9700, located in GJ-56, would give these customers the option of having all their work printed in one facility instead of hard copy printed in ODP and microfilm printed in P&PD.

c. The negative aspect of locating a 9700 in GJ-56, aside from space problems, is the appearance of reestablishing a printing operation in the Headquarters building. This may turn out to be a positive aspect in terms of a service that can be provided to components in the Agency.

8. Personnel Resources

- a. Initially a 9700 would require additional personnel resources to establish job parameters and convert the Agency forms to a magnetic storage medium. After this initial investment (approximately half a work year) in personnel resources, the annual one work year savings indicated in paragraph four would be realized.
- There are two possible locations, organizationally, for the 9700. One location would be within the Composing Branch. With the 9700's close relationship to ETECS and its ability to automate forms design and production, the logical location would appear to be in the Composing The 9700 could be utilized in the same manner Branch. as a phototypesetter. With its flexibility to print proof copies and to automate forms design, the bulk of the anticipated savings would be realized by the Composing Branch. The second possible location would be within the Copy Center. This location would give easy access to the 9700 for both P&PD and Agency users. The Composing Branch could do its composition work, provide a tape for the 9700 and have finished copies printed. The 9700 would be located both physically and organizationally with the Xerox 9200/9400's, which should, in turn, provide maximum cost effective utilization of all Copy Center reproduction equipment. Personnel costs would be lower under this arrangement because a journeyman compositor would not have to operate the machine. Composing Branch personnel however, should learn to operate the 9700 so as to provide backup support and produce Composing output in the event that the 9700 operator is not on duty.

At a minimum, one additional position would have to be added to the Copy Center T.O. to operate the 9700. This would provide full coverage during the day shift. On the second and third shifts Composing Branch personnel could generate their output. Although initially the personnel situation may become critical, especially while operating two forms systems, the projected personnel savings should materialize within the first 6 months. Once the projected savings are realized the division will save one work year overall. It is likely, however, because of its flexibility and speed, that the machine will create new work. While this device will save the indicated work hours on the jobs specifically identified, it will probably create new requirements in the form of services to new customers for 9700 type of output. additional personnel requirements could range from one to four positions and only P&PD management can answer to their eventual availability.

9. 9700 Cost Analysis

- a. As stated previously, the 9700 is an expensive machine to lease or purchase and operate. Its per copy cost is always greater than the Xerox 9200/9400 as outlined in Attachment E. The total copy cost exceeds both the multilith and offset printing presses when over 300 impressions are required on a particular job (see Attachment F). In the overall cost comparisons of identified potential P&PD jobs (Attachment B), the 9700 would save approximately \$10,000 per year in operating costs. This savings estimate is based, primarily, on labor cost savings. The costs are based on renting the 9700 and producing a volume of 700,000 impressions per month.
- b. If the 9700 were to be used to print only one or two copies of a particular job and to create camera masters for either 9200/9400s or presses, the overall savings would be greater but the cost per copy on the 9700 would increase.
- c. Properly used, the 9700 can reduce the overall operating cost of P&PD. In order to effect proper utilization, the branch chiefs, planners, and Production Manager would all have to work together to insure that jobs were correctly planned so as to use the 9700 to its fullest potential. If all efforts are not coordinated, the 9700 could become one of the most expensive operations in P&PD. When properly utilized, however, the trade off in high machine cost is lower labor expense, combined with a quicker turnaround time.

10. Additional Considerations

- Some major printing trade journals are describing electronic printers, such as the Xerox 9700, as the printing press of the future. Others cite the advantages of the non-polluting, permanent dry toner that has a much longer shelf life then conventional printing inks (with their associated premature drying problems). They state, furthermore, that non impact printers are quiet, relatively clean and free of effluents; they can be operated in an office environment. Future enhancements on the 9700 include duplex (front and back) printing, higher resolution/quality output, the possibility of color and half tone printing, the photocomposition software previously discussed and there is even discussion of a web feed accessory. With a machine of the 9700's capabilities and anticipated future enhancements it becomes evident that Xerox is in this segment of the market to stay.
- b. The 9700s are being justified and purchased by Government and commercial firms by reason of their fast throughput, overall flexibility and labor saving techniques. There are over 125 machines in use nationwide with 18 of these in the Washington area, (see Attachment H). In most instances the machine is being used to create camera ready masters for subsequent printing on other devices. From available reports, the 9700s in use are more reliable than 9200/9400s and the quality of output is better than conventional Xerox machines.
- c. Because of the flexibility in output from the 9700 and the speed with which it prints, its arrival could impact on P&PD's present and future printing operations. If a publisher had a document in the ODP computer system via a word processor or VM script file, he could print that job on ODP's 9700 bypassing P&PD entirely. This action might not provide the user with the highest quality product, but he would obtain a very acceptable product at a much faster rate than in going through the traditional P&PD sequence. As more and more Agency components acquire direct access to the ODP computer system the potential impact on P&PD becomes greater.

- d. With ODP and possibly P&PD providing 9700 service to the Agency, the need for additional Agency components to acquire Xerox 9700's should be practically nil. The one exception is the current Request for Proposal (RFP) that is being circulated by Cable Secretariat for 9700 devices or similiar type of equipment. The type and volume of work that is to be done in Cable Secretariat's Automatic Printing and Reproduction Systems (APARS) could not be handled by P&PD. Therefore, a separate 9700 type system is justified for APARS.
- e. If P&PD should procure a Xerox 9700 there are certain questions to be answered in the area of Agency service. These questions are: (1) should P&PD provide 9700 service to anyone in the Agency or should that type of service be provided only by ODP? (2) should a backup situation be developed between ODP and P&PD for 9700 work instead of either component purchasing additional equipment for backup? (3) because of the cost factors involved, should multiple copy jobs in ODP automatically be routed to P&PD to be produced in the least expensive manner?
- f. Because of the flexibility exhibited in the 9700, to provide multiple output capabilities for both data processing and printing environments, the answer to overall Agency 9700 service is very complex and will have to be answered by management from both ODP & P&PD.

Conclusions

- 1. From all indications it appears that the Xerox 9700 can increase the overall effectiveness of P&PD's ability to accomplish its mission. A 9700, located in P&PD, could: (a) automate forms design and production (b) save a substantial amount of work hours (c) decrease turnaround time on proof copies and identified printed publications and (d) cut overall costs on some of the potential applications.
- 2. There are three primary problems with implementation of a Xerox 9700 operation in P&PD. These problems are: (a) lack of a full page make up capability with the ETECS system (b) the inability to directly interface the 9700 with ETECS and (c) the lack of adequate photocomposition software within the 9700. These problems would hinder the inclusion of a 9700 into P&PD production functions. These problems can be overcome, to some degree, with the use of the House of Representatives Atex software module so as to format ETECS tapes for 9700 use.
- 3. In the placing of a 9700 in strictly an off line configuration, employees would be reluctant to use the device because of the additional burden of handling magnetic tape. In order to make the 9700 successful, a management position on machine usage would have to be taken. The machine would have to become an overall part of P&PD production capabilities and used wherever and whenever possible. Planners, supervisors and workers would have to work together to assure maximum utilization.
- 4. If P&PD is to continue to provide overall printing support to the Agency, acquisition of a 9700 type machine is likely to become a necessity. The alternative is for other components to acquire this equipment and produce their own output and/or provide printing services for other Agency components.
- 5. There are four alternative solutions to the Xerox 9700 question. These solutions are as follows:
 - a. Lease a Xerox 9700 at a cost of \$7,100 per month, on a trial basis, for test and evaluation.
 - b. Purchase a Xerox 9700 at a cost of \$360,000 (with necessary peripherals).
 - c. Use ODP's Xerox 9700 for testing output and forms generation before making a decision on acquiring a P&PD machine.

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d. Status Quo. Continue to monitor the 9700 as its capabilities increase, costs change, and applications increase; recommend appropriate action at a later date.

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Recommendations

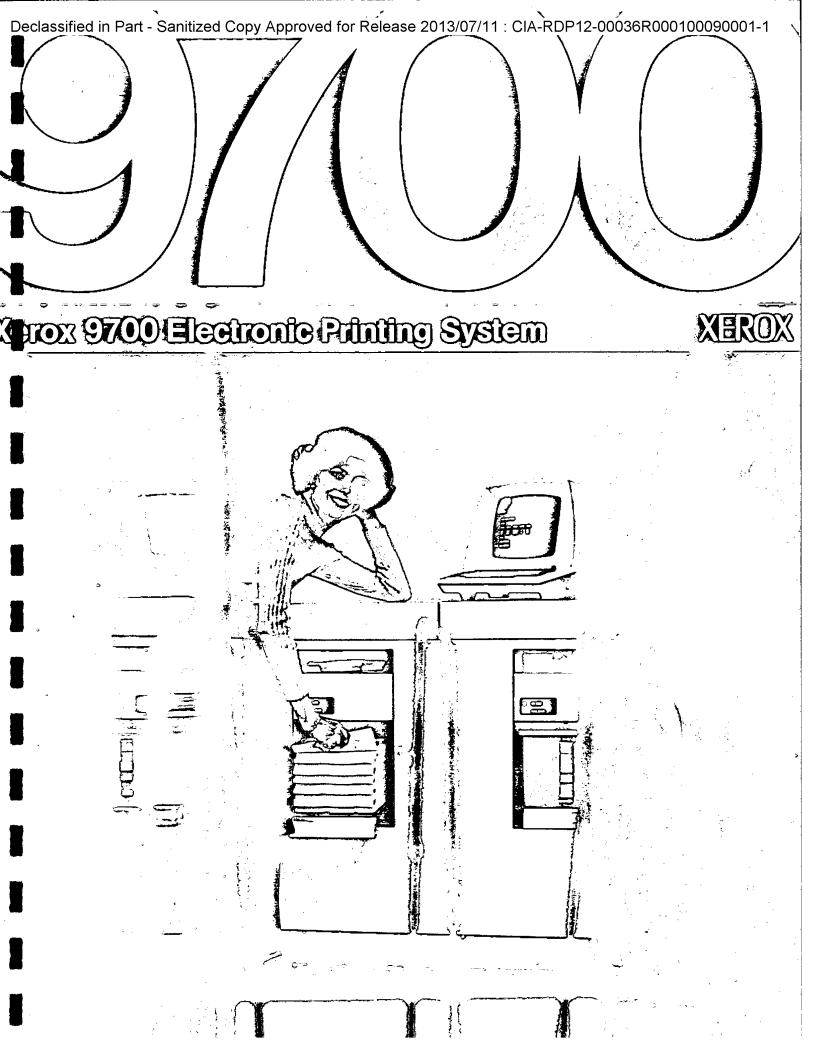
- 1. Based on the findings of this study, it is recommended that P&PD lease a Xerox 9700 for test and evaluation at a cost of approximately \$7,100.00 per month (Attachment F). The test period should be for not less than six months. At the end of the test period a determination should be made as to the continuation of the lease and overall usage of the 9700.
- 2. It is further recommended that the following actions be taken:
 - a. The 9700 should be located in GJ-56, Headquarters.
 - b. A minimum of one position should be established for a 9700 operator.
 - c. All new and revised forms should be designed on the 9700. On an on-going basis, existing forms should also be converted to the 9700.
 - d. Whenever possible proof copies of publications should be printed on the 9700.
 - e. Work should begin with publishers such as Regulations Control Branch in an effort to convert the printing of their publications to the 9700.
 - f. The ODP/OL Task Group on Output Media should be given the tasks of identifying areas of responsibilities and functional tasks as they pertain to the 9700. Once these areas of responsibility are decided, a Headquarters Notice should be issued, which describes the availability of Xerox 9700 service.

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ATTACHMENT A

XEROX 9700 BROCHURE

AND SAMPLES





Xerox 9700 Electronic Printing System

The Xerox 9700 Electronic Printing System combines computer, laser, and xerographic technologies to print data and textual material and forms images of practically unrestricted size, shape, and orientation directly from digital information.

The Xerox 9700 prints on ordinary 8½-by 11-inch cut sheet paper at a rate of two pages per second—up to 18,000 lines per minute, depending upon data format. The 9700 operates on-line, off-line, or on-line/off-line selectable with most IBM System/370 and System/360 computers, and off-line with a variety of standard vendor tape formats.

The features of the on-line, off-line, and selectable models, except for the method of entering information into the printing system, are identical These include:

Electronic Forms

Forms, including logos, signatures, and charts, are stored within the Xerox 9700 and imaged electronically, upon demand, concurrently with the variable data. This eliminates the need for forms overlays and most preprinted forms as well as assuring perfect registration. Multiple forms, stored in digital format, are changeable on a pageto-page (up to six per job) or copy-to-copy basis. And new forms can be created within minutes.

Original Output

Each page is an executive-quality xerographic original — no barely legible carbon copies, no messy bursting or decollating.

Character Font Styles and Sizes Output can be customized for specific needs. The Xerox 9700 offers unlimited font styles in a continuous range of type sizes from 4 to 24 point equivalents.

Horizontal/Vertical Printing Characters may be printed horizontally or vertically with equal ease. The Xerox 9700 can switch instantly between horizontal and vertical page formats, combining the two styles within a single report.

Variable Line and Character Spacing The Xerox 9700 is not limited to the fixed line and character spacing of other computer printers. Line spacing is continuously variable from 3 to 18 lines per inch, and character spacing is continuously variable from 4 to 30 characters per inch.

Large Variety of Paper Types and Weights

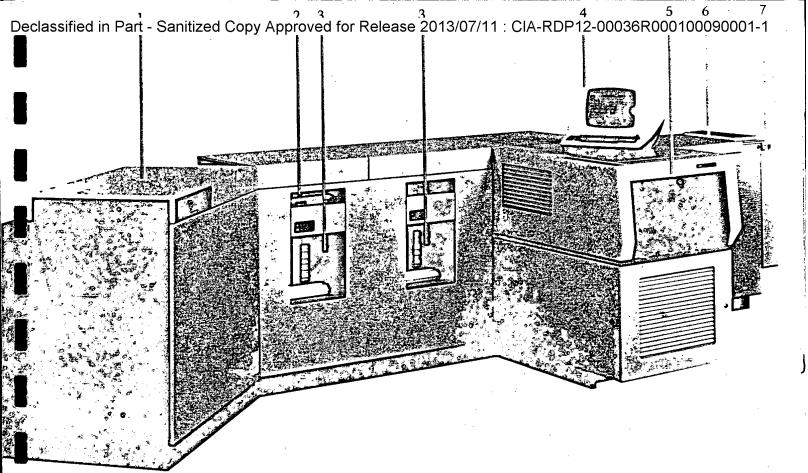
The Xerox 9700 offers great flexibility in paper types and weights, ranging from economical 16-pound bond up to 110-pound index, including pre-drilled and preperforated papers.

Continuous Operation

Several features are designed to provide non-stop operation, maximizing productivity. Dual input trays and dual output stackers allow loading and unloading of paper while the system continues printing. Input disk buffering eliminates the need to stop printing while accepting additional jobs or mounting a new tape. And electronic forms can be changed automatically without interrupting full-speed operation.

Operating Simplicity

The operator interacts with the system at a CRT console using simple English-language commands. Because of the non-stop operating features, need for operator intervention is minimal.



1. System Controller

Contains system disk for input buffering, digital processor memory for forms storage, and electronic circuitry for data input and overall system control.

2. Sample Print Tray

Extra test pages are diverted to this tray on request, allowing monitoring of system operation without interruption of printing.

3. Output Stackers

Two output stackers assure continuous printing. Output is automatically transferred to second bin after one bin

is filled, and operator is notified that output is ready for removal. Easy-access containers can be placed in output stackers to make output easier to remove and carry for distribution.

4. Operator's Keyboard Display Console Provides the means of operator interaction with the Xerox 9700. Operator uses this console to initiate and monitor jobs. Instructions to operator can also be initiated by the 9700 and communicated via this CRT console.

5. Image Generator

This unit provides electronic control to the laser beam which creates the character images. It accesses the font

memory where characters and forms are stored digitally as dot patterns.

6. Xerographic Printer

Pages are printed xerographically in this unit at two-page-per-second speed (up to 18,000 lines per minute, depending upon data format).

7. Input Paper Trays

Two input trays assure continuous operation. When main tray approaches empty state, operator is signalled and paper feed is automatically transferred to auxiliary tray.

Specifications

Functional Units

Printer Complex:

Xerographic Printer

Image Generator

Output Module

System Controller

CRT Console

On-Line Interface

Host System Capability:

IBM System/370 Models 135 and larger

IBM System/360 Models 30 and larger

Host Software Compatibility:

OS/VS/370

OS/360

DOS/VS/370

DOS/360/370

Off-Line Tape Input

1600 BPI, 9-track tape conforming to one of the following

formats:

ANSI

IBM OS/VS/370, OS/360, DOS/VS/370, DOS/360/370

Burroughs MCP 2500-4700, MCP 6700

Honeywell OS2000, OS6000

Univac Series 70

Univac 1100 - OS Standard Files

Tape Input Codes:

EBCDIC

ASCII

BCD (9-track)

Forms Consideration

Paper: 81/2 by 11-inch, 16-pound bond to 110-pound index

cut sheet - including Xerox microsphere, Xerox label

stock, tinted, pre-drilled, pre-perforated.

Preprinted Forms: 81/2 by 11-inch within previously

stated weights and characteristics.

Forms Creation: Stored digitally and created electronically

concurrent with variable data.

Output

Print Format:

Variable 3 to 18 lines per inch vertical; variable 4 to 30

characters per inch horizontal.

Total page density (variable data) of up to 9900

alphanumeric characters in basic system; 19,800

alphanumeric characters in fully extended system.

Two pages per second (up to 18,000 lines per minute,

depending upon data format).

Character Set:

4 64-character sets standard

12 128-character sets maximum (fully extended system)

300 dots per inch vertical; 300 dots per inch horizontal.

Output Stackers:

Two bin modules, 1500-page capacity (20-pound bond)

each, with job or run offsetting capability.

Input Paper Trays:

Main: 2500-page capacity (20-pound bond)

Auxiliary: 400-page capacity (20-pound bond)

Physical Characteristics

Length Depth Height Weight Dimensions (max.)

Printer Complex 135 in. 64 in. 40.9 in. 2225 lbs.

System Control

39 in. 28 in. 40.9 in. 500 lbs. Module

Magnetic Tape

22 in. 29 in. 48.0 in. 285 lbs. Unit

25 lbs. 15 in. 20 in. 13.5 in. CRT Console

Access Requirements:

3 ft. clearance on all sides for maintenance access.

Environmental Requirements:

Recommended Operating

72°F ±4°F Temperature

Minimum/Maximum

Operating Temperature 60 to 80°F

Recommended Relative

 $45\% \pm 10\%$ Humidity

Minimum/Maximum

Relative Humidity 30 to 65%

Heat Dissipation:

38,000 Btu per hour Operating

12,000 Btu per hour Standby

Electrical Requirements:

120/208 or 120/240 V AC System Control Module

60 Hz

20 amp service

120/208 or 120/240 V AC Printer Complex

60 Hz

60 amp service

Additional Requirements (Off-Line and On-Line) Off-Line Selectable)

Environmental Requirements:

Heat Dissipation:

Operating

5700 Btu per hour

Standby

3700 Btu per hour

Electrical Requirements:

120 V AC Magnetic Tape Unit

60 Hz

15 amp service

XEROX

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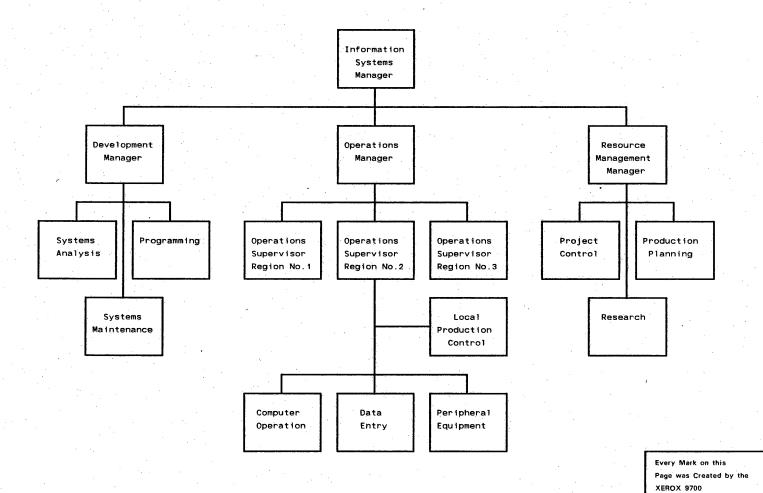
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BOLIVIA,__REPUBLIC__OF

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DEFENSEMIN. OF EDUCATION & CULTUREMIN. OF ENERGY &

HYDROCARBONSMIN. OF FINANCEMIN. OF FOREIGN AFFAIRS & WORSHIPMIN.

OF INDUSTRY & COMMERCEMIN. OF INTERIOR, IMMIGRATION &

JUSTICEMIN. OF LABOR & LABOR DEVELOPMENTMIN. OF MINES &

METALLURGYMIN. OF PLANNING & COORDINATIONMIN. OF SOCIAL WELFARE

& PUBLIC HEALTHMIN. OF TRANSPORTATION, COMMUNICATIONS &

CIVIL AERONAUTICSMIN. OF URBAN DEVELOPMENT & HOUSING

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ATTACHMENT B

OVERALL COSTS COMPARISONS

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Attachment B

Overall Cost Comparisons

1. Forms Design and Printing

A. Design

		Work Hours	Work Hour Cost
(1)	Current Method	1728	\$20,736.00
(2)	Xerox 9700	1006	\$12,072.00
	Savings	722	\$ 8,664.00
	B. Printing	(5,885,65	53 Impressions)
	•	Work Hours	Total Cost
(1)	Current Method	1,037.50	88,284.79
(2)	Xerox 9700	980.94	108,884.58
	Savings	56.56	(\$ 20,599.79)

An annual savings of 778.58 work hours but an additional overall cost (includes labor, equipment and supplies) increase of \$20,599.79.

2. Proof Copies

A. Overall Annual Cost For 172,152 Proofs

		Work Hours	Work Hour Cost	Supplies	Total Cost
(1)	Current Method	336,12	4033.44	\$17,972.04	\$22,005.48
(2)	Xerox 9700	53.04	636.48	3,434.40	4,070.88
	o	283.08	3396.96	\$14,537.64	\$17,934.60

An annual savings of 283.08 work hours and \$17,934.60 would be saved by printing proofs via the 9700 method.

3. Publication Printing

A. This cost analysis includes printing all the publications identified in Attachment C. In some instances the 9700 would be more expensive than the conventional method, however, in some instances throughput time could be cut by as much as 40 percent.

		Work Hours	Total Costs (Includes Equipment Labor & Supplies)
(1)	Current Method	1,659.62	\$102,229.50
	Xerox 9700	796.10	81,174.84
		863,52	\$ 21,054.66
		·	1

4. Total Cost Savings/Increases - () denotes increase

	·	·	Work Hours	Total Cost
Α.	Forms		778.58	\$(20,599.79)
В.	Proofing		283.08	17,934.60
C.	Printing		863.52	21,054.66
T	otal Savings		1,925.18	\$18,389.47

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ATTACHMENT C

POTENTIAL PUBLICATIONS

FOR 9700 PRINTING

Attachment C

Potential Publications for 9700 Printing

- 1. National Intelligence Daily (NID) Cable
- 2. Area Briefs
- 3. Research Papers
- 4. FBIS Trends on Communist Media
- 5. Scientific Intelligence Weekly Review
- 6. Weapons Intelligence Daily Review
- 7. FBIS Analysis Report
- 8. FBIS Revisions (USSR, China, Africa, Latin America, Middle East & Africa, and Western Europe)
- 9. Intelligence Memorandums*
- 10. Library Accessions List
- 11. Intelligence Assessments*
- 12. Field Regulations
- 13. Field Handbooks
- 14. Headquarters Regulations
- 15. Headquarters Handbooks
- 16. National Intelligence Estimates (NIE) Drafts
- 17. Staff Notes (NFAC)
- * Those memorandums and assessments that contain only textual material.

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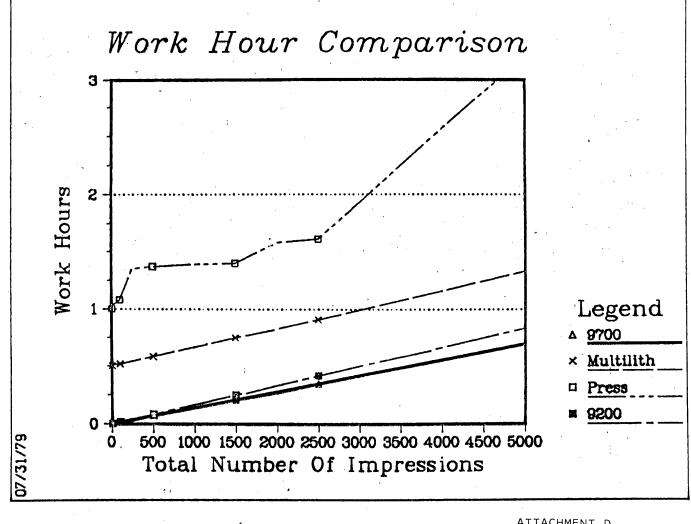
ATTACHMENT D

WORK HOUR COMPARISON

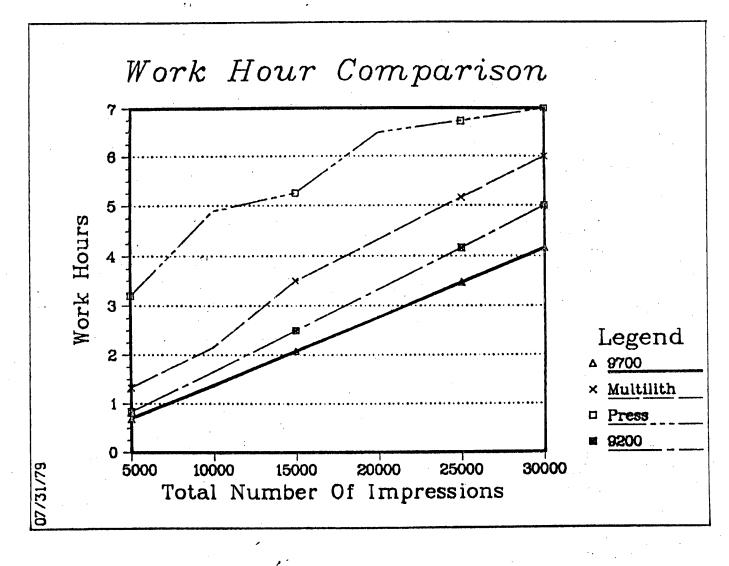
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ATTACHMENT D

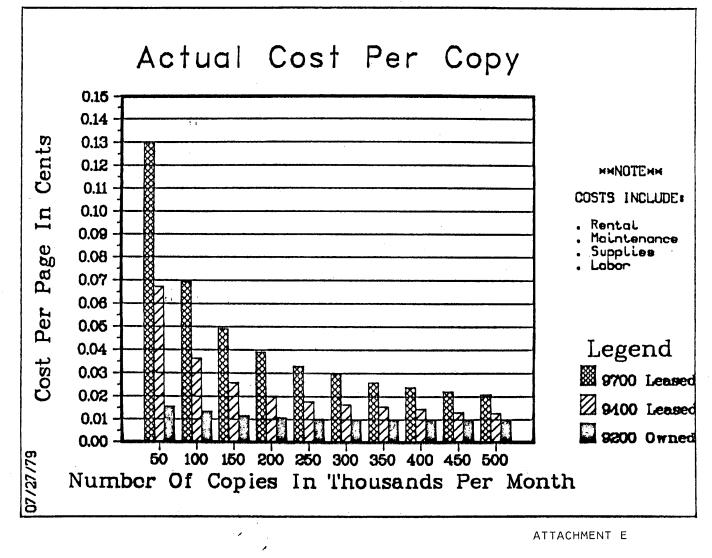


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ATTACHMENT E

ACTUAL COST PER COPY

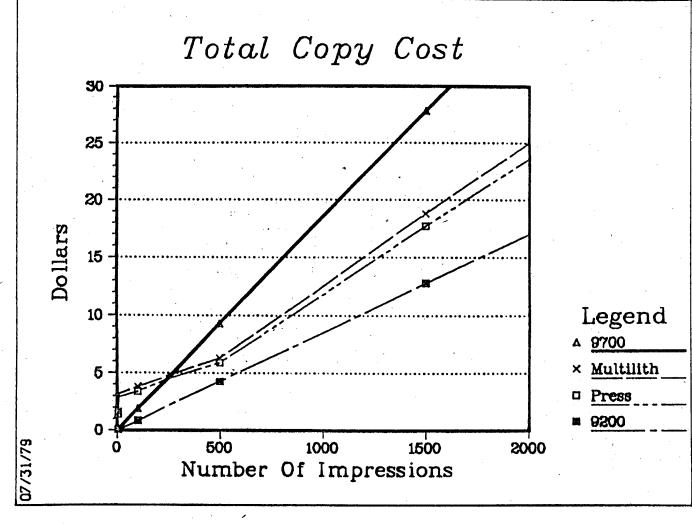
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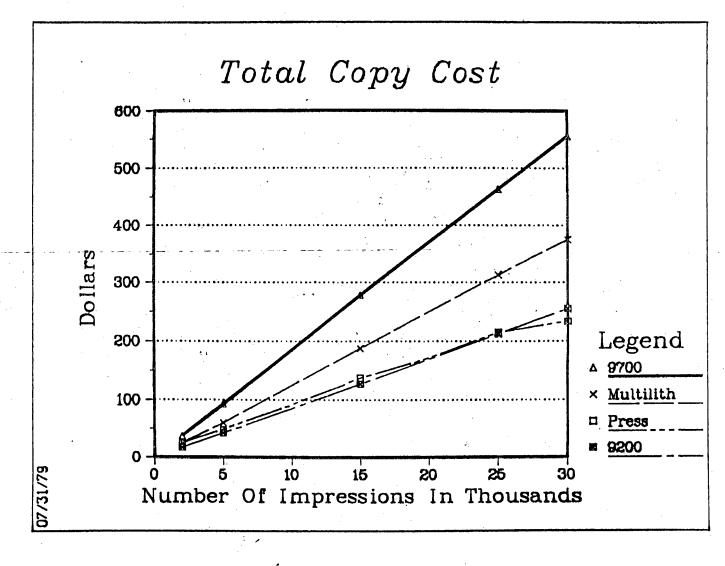
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ATTACHMENT F

TOTAL COPY COST



ATTACHMENT F



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ATTACHMENT G

XEROX 9700 LEASE/PURCHASE COST

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Attachment G

Xerox 9700 Lease/Purchase Cost

Item	Purchase	Maintenance (Rental Includes Maintenance)
Basic Xerox 9700	\$285,000.00	\$3,900.00	\$5,000.00
1600 BPI Read/Write Tape Drive	35,000.00	350.00	1,200.00
Forms Memory	5,000.00	15.00	150,00
Font Memory	4,000.00	10.00	100.00
Duplex Option	27,000.00	150.00	650.00
Totals	\$356,000.00	\$4,425.00 <u>2</u> /	\$7,100.00 <u>1</u> /

- 1/ Plus a per page cost of 0.00035 cents per copy.
- $\underline{2}$ / Plus a per page cost of 0.0015 cents per copies in excess of 1.7 million pages.

Total Cost of a 6 Month Test

Rental	\$7,100.00 per month x 6 months	\$42,600.00
Copy Charge	500,000 pages per month x 0.00035 cents x 6 months	1,050.00
	Total Cost	\$43,650.00

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ATTACHMENT H

WASHINGTON, D.C. AREA 9700 USERS

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Attachment H

Washington, D.C. Area 9700 Users

- 1. Defense Documentation Center
- 2. Navy Defense Publications and Printing
- 3. House of Representatives
- 4. Automated Management Systems (AMS)
- 5. Automated Datatron Incorporated (ADI)
- 6. Food and Drug Administration
 - 7. National Security Agency
- 8. State Department
- 9. NASA Headquarters
- 10. World Bank
- 11. National Service Foundation
- 12. Housing Urban Development
- 13. U.S. Senate
- 14. Executive Office of the President
- 15. Fanny Mae
- 16. Central Intelligence Agency ODP
- 17. PH&H (Baltimore Service Bureau)
- 18. COMNET (Baltimore Service Bureau)

